

external network interface circuits coupled to said host bus for interfacing said host computer to one or more networks external to said customer premises including at least a DOCSIS compatible cable modem for bidirectional digital data communication over a hybrid fiber coaxial cable network, and one or more video network interface circuits functioning to receive analog and/or digital video signals delivered over a hybrid fiber coaxial cable network or via satellite or terrestrial and deliver digital video data compressed using MPEG compression; and wherein said host computer is programmed to implement an IP packetization process to receive said compressed digital video data from said one or more video external network interface circuits and packetize said compressed digital video data into IP packets addressed to the device and/or process which requested said digital video data and which is coupled to said gateway by one or more of said local area networks or busses, and said host computer being further programmed with a routing process to receive said IP packets from said IP packetization process and to receive IP packets from said DOCSIS compatible cable modem and automatically to all routing, encapsulation and protocol conversion necessary to deliver said IP packets to a device and/or process in execution on a device coupled to said gateway apparatus via one of said local area network interfaces or bus interfaces and identified by address information in said IP packets, and to receive data from a device and/or process in execution on a device coupled to said gateway apparatus via one of said local area network interfaces or bus interfaces and do any and all deencapsulation; encapsulation, protocol conversion and routing necessary for each packet to be automatically delivered to an appropriate one or more of said external network interfaces coupled to a device and/or process to which each packet is addressed for

3 2 upstream delivery via an appropriate medium of transmission to whatever device
3 3 and/or process to which said data is addressed, and said host computer
3 4 programmed with a management and control process for receiving requests for
3 5 data from a device and/or process coupled to one or more of said local area
3 6 network interfaces or said bus interfaces, and sending digital control data to one
3 7 or more of said external network interface circuits to control them to obtain said
3 8 requested data from a source coupled to said gateway via one or more of said
3 9 external network interfaces.

1 2. [new--formerly claim 18 of the parent application] A gateway apparatus
2 comprising:
3 a host computer having a host bus and controlled by at least a
4 management and control process;
5 one or more network interface means for coupling said host computer to
6 one or more local area networks and/or one or more buses that carry upstream
7 and downstream data between said gateway and one or more devices located at
8 a customer premises;
9 external network receiver interface means coupled to said host bus for
1 0 interfacing said host computer to one or more networks external to said customer
1 1 premises, said external network interface means comprising a DOCSIS cable
1 2 modem means for receiving downstream broadband data in the form of IP packets
1 3 encapsulated in MPEG packets and outputting IP packets, and for receiving
1 4 upstream data from one or more devices coupled to one or more of said network
1 5 interfaces and transmitting said data on a DOCSIS upstream on an external
1 6 network comprised of a hybrid fiber coaxial cable system, and said external

network interface means further comprising one or more video network interface means functioning for receiving analog and/or digital video signals delivered over a hybrid fiber coaxial cable network or via satellite or via terrestrial and for delivering from said received video signals digital video data compressed using MPEG compression;;

an IP packetization means which may be part of said host computer and which is coupled to said host bus, for packetizing compressed digital data received from said said one or more video network interface means into internet protocol packets (hereafter IP packets);

a routing means which may be part of said host computer and coupled to said host bus and having one or more outputs coupled to said one or more network interface means and coupled to receive said IP packets from said IP packetization means and coupled to receive IP packets from said DOCSIS cable modem for routing said IP packets and delivering each said IP packets to the appropriate network interface means for delivery to the device which ordered data in said IP packet, and for receiving upstream data from devices and/or processes coupled to said one or more local area networks or busses and routing said data to the appropriate external network interface means for upstream transmission.

1 3. [new--formerly claim 34 of the parent case] A gateway apparatus comprising:

2 a host bus;

3 a plurality of expansion connectors electrically coupled to said host bus;

4 one or more expansion modules coupled to said host bus through one or

5 more of said expansion connectors, each expansion module including the
6 appropriate circuitry to bidirectionally interface with an external network medium
7 comprised of either a hybrid fiber coaxial cable of a CATV system, a digital
8 subscriber line local loop, an analog plain old telephone service line or a satellite
9 dish;

10 one or more network interface adapters for coupling said gateway to one
11 or more local area networks or busses which convey digital data to one or more
12 items of customer premises equipment; transmitted from said one or more items of
13 customer premises equipment to said gateway via one or more of said local area
14 networks or buses for data or video or audio programs and to react thereto by
15 appropriately controlling said one or more expansion modules to retrieve the
16 requested data or video or audio program, and programmed to perform an IP
17 packetization process to receive downstream digital data from one or more of
18 said expansion modules which is not already in IP packet form and data from said
19 management and control process and encapsulate said data into internet protocol
20 packets addressed to the customer premises equipment and one or more
21 processes running on customer premises equipment which requested said data,
22 and said host computer further programmed to perform a routing process to do all
23 packetization, protocol conversion and routing functions necessary to route
24 packets between any of said expansion modules and any of said one or more
25 local area networks and/or busses.

1 4. [new--formerly claim 36 of the parent case] A process carried out in a
2 gateway, comprising:

3 (1) receiving a DOCSIS downstream comprised of MPEG packets

encapsulating IP packets with the data of said MPEG packets modulated onto a downstream carrier and recovering and outputting said IP packets using a DOCSIS cable modem;

(2) using a digital video tuner to receive downstream digital video transmissions in the form of an MPEG transport stream modulated onto a radio frequency carrier and demodulating and transport demultiplexing said MPEG transport stream to extract MPEG packets encoding audio and video components of a desired video program;

(3) packetizing said MPEG packets encoding audio and video components of a desired video program into IP packets;

(4) routing said IP packets from said packetizing step and IP packets received from said DOCSIS cable modem to an appropriate network interface; and

(5) performing the appropriate protocol conversions to transmit said IP packets to the devices to which they are addressed over a local area network or bus.

5. [new--formerly claim 41 of the parent case] An apparatus comprising:

a DOCSIS compatible cable modem for recovering digital data encoded in a DOCSIS downstream signal transmitted on a cable television system hybrid fiber coax medium (hereafter HFC) and for providing said recovered data at an output for use by a computer or other digital device coupled to said cable modem, and for transmitting upstream data from said computer or other digital device on a DOCSIS upstream transmitted on said HFC;

a tuner for tuning in a radio frequency carrier signal carrying a video signal;

first means coupled to said tuner for recovering digital data encoding a video program in said video signal, said digital data being compressed for transmission over a data path;

an adapter circuit comprising:

an decoder for decompressing said compressed digital data to generate uncompressed data encoding audio and video signals of said video program;

an audio processor for converting said uncompressed digital data encoding said audio signal into an analog audio signal;

video signal generation means for converting said uncompressed digital data encoding a video signal into an NTSC, PAL, SECAM or composite format video signal;

means for conveying said audio and video signals to an input or inputs of a television set in a proper format for viewing and listening to said video program;

first control means for controlling said cable modem, said tuner and said first means;

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- 28 second control means for controlling said adapter; and
29 a data path coupling said first means to said adapter.

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